BAROMETRIC PRESSURE COMPUTATIONS

- **3 SEPARATE PRESSURE PARAMETERS:**
  1. STATION PRESSURE
  2. SEA LEVEL PRESSURE
  3. ALTIMETER SETTING

- **STEPS TO FOLLOW:** ***(STATION PRESSURE)***
  1. READ THE BAROMETER IN INCHES **EX: 30.250**
  2. ENTER THIS VALUE AS YOUR STATION PRESSURE IN ***COLUMN 22.***

  NOTE: THE TREND INDICATED OVER THIS 3 HOUR PERIOD IS A FALLING BAROMETER.

- **ENTER/COMPUTE STATION PRESSURE (COL 22), SEA LEVEL PRESSURE (COL 22A), AND THEN ALTIMETER SETTING (COL 13).**

REMARKS AND SUPPLEMENTAL CODED DATA 14	STATION PRESSURE (inches) 22	SEA LEVEL PRESSURE hPa 22a	TOTAL SKY COVER 17	OBSERVER'S INITIALS 15
FG E (NOT RQD FOR QM'S)	30.250			
NOT RQD FOR QM'S	30.050			
NOT RQD FOR QM'S	29.965			

SEA LEVEL PRESSURE (COL 22a)

COMPUTATION PROCEDURES:

1. DETERMINE THE HEIGHT OF THE BAROMETER ABOVE SEA LEVEL: (CG-47 CLASS **APPROX 60 FT**)
2. USING AN ADDITIVE REDUCTION CONSTANT TABLE (AVAIL IN INSTRUCTIONS), DETERMINE THE CORRECTION FOR A BAROMETER AT **60 FT**.

   STANDARD CORRECTION 60FT = .064”
3. ADD CORRECTION TO THE STATION PRESSURE:

STATION PRESSURE: **30.250**

CORRECTION: **+.064**

SEA LEVEL PRESSURE: **30.314 INCHES**

4. CONVERT TO MILLIBARS USING AVAILABLE CONVERSION TABLES

   30.314 = 1026.5 MILLIBARS.
5. ENTER **265** IN COL 22a

REMARKS AND SUPPLEMENTAL CODED DATA 14	STATION PRESSURE (inches) 22	SEA LEVEL PRESSURE 22a	TOTAL SKY COVER 17	OBSERVER'S INITIALS 15
NOT REQUIRED	30.250	265		
NOT REQUIRED	30.050			
NOT REQUIRED	29.965			

ALTIMETER SETTING (COL 13)

- ALTIMETER SETTING IS A PRESSURE VALUE USED BY PILOTS. THIS VALUE MUST BE CORRECTED TO THE HEIGHT OF THE FLIGHT DECK:
- **NOT REQUIRED FOR QM'S ON SHIPS WITHOUT AN AIR DET.**

- **COMPUTATION PROCEDURES:**

1. DETERMINE STATION PRESSURE: **30.250"**
2. ADD FLIGHT DECK ADDITIVE CONSTANT. THIS VALUE IS THE ***DISTANCE FROM THE BAROMETER TO THE FLIGHT DECK***: (WE WILL USE **25 FT**).

STATION PRESSURE: 30.250
25FT CORRECTION: + .027
ALTIMETER SETTING: 30.277
ROUND: 30.277 TO 30.280

3 . **ENTER 028 IN COL 13:**

PRESENT WEATHER 9	SKY CONDITION 10	TEMP (°C) 11	DEW POINT (°C) 12	WET BULB (°C) 20	ALTIMETER SETTING (ins) 13
	FEW010 SCT043 BKN180	10.7	08	08.5	028
HZ	SCT008 BKN040	10.7	08	08.4	
-SHRAFG	BKN008 0VC025	10.7	09	09.8	

PRESSURE COMPUTATION EXERCISE

GIVEN THE FOLLOWING, DETERMINE SEA LEVEL PRESSURE AND ALTIMETER SETTINGS.

REQURED DATA:

BAROMETER HEIGHT: **55 FT**

HEIGHT OF FLIGHT DECK (ASL) : **25 FT**

COL 22: **30.050** **COL 22**: **29.925**

CORRECTION:

SEA LVL PRESS:

CONVERT TO MB:

COL 22a ENTRY:

ALTIMETER COR:

ALTIMETER:

COL 13 ENTRY:

CORRECTION:

SEA LVL PRES:

CONVERT TO MB:

COL 22a ENTRY:

ALTIMETER COR:

ALTIMETER:

COL 13 ENTRY:

STATION ELEV (FT)	INCHES Hg	Mb	STATION ELEV (FT)	INCHES Hg	Mb	STATION ELEV (FT)	INCHES Hg	Mb
25	.027	.903	37	.039	1.337	49	.052	1.771
26	.028	.939	38	.041	1.373	50	.053	1.807
27	.029	.976	39	.042	1.409	51	.054	1.843
28	.030	1.012	40	.043	1.445	52	.055	1.879
29	.031	1.048	41	.044	1.481	53	.057	1.915
30	.032	1.084	42	.045	1.518	54	.058	1.951
31	.033	1.120	43	.046	1.554	55	.059	1.987
32	.034	1.156	44	.047	1.590	56	.060	2.023
33	.035	1.192	45	.048	1.626	57	.061	2.060
34	.036	1.229	46	.049	1.662	58	.062	2.096
35	.037	1.265	47	.050	1.698	59	.063	2.132
36	.038	1.301	48	.051	1.734	60	.064	2.168

PRESSURE COMPUTATIONS
ANSWERS

GIVEN THE FOLLOWING, DETERMINE SEA LEVEL PRESSURE AND ALTIMETER SETTINGS.

REQUIRED DATA:

BAROMETER HEIGHT : **55 FT**

HEIGHT OF BAROMETER ABOVE FLIGHT DECK (ASL) **25 FT**

COL 22: **30.050**

CORRECTION: **+.059**

SEA LVL PRES: **30.109**

CONVERT TO MB: **1019.6**

COL 22a ENTRY : **196**

ALTIMETER COR: **+.027**

ALTIMETER: **30.077**

COL 13 ENTRY : ***3008***

COL 22: **29.925**

CORRECTION: **+.059**

SEA LVL PRES: **29.98**

CONVERT TO MB: **15.4**

COL 22a ENTRY: **154**

ALTIMETER COL: **+.027**

ALTIMETER: **29.952**

COL 13 ENTRY : ***2*999**

PRESENT WEATHER 9	SKY CONDITION 10	TEMP (C^{O}) 11	DEW POINT (C^{O}) 12	WET BULB (C^{O}) 20	ALTIMETER SETTING (ins) 13
	FEW010 SCT043 BKN180	10.7	08	08.5	028
HZ	SCT008 BKN040	10.7	08	08.4	008
-SHRAFG	BKN008 OVC025	10.7	09	09.8	999

REMARKS AND SUPPLEMENTAL CODED DATA 14	STATION PRESSURE (inches) 22	SEA LEVEL PRESSURE 22a	TOTAL SKY COVER 17	***OBSERVER'S INITIALS*** ***15***
NOT REQUIRED	30.250	265		
NOT REQUIRED	30.050	196		
NOT REQUIRED	29.965	167		

TOTAL SKY COVER & OBSERVER INITIALS (COLS 17 & 15)

- **COLUMN 17 TOTAL SKY COVER**:
- ENTER THE TOTAL AMOUNT OF OBSERVED CLOUDS COVERING THE CELESTIAL DOME
  - **ENTER ONLY 0 THROUGH 8**

- **OBSERVERS INITIALS:**
  PRINT YOUR INITIALS CLEARLY

REMARKS AND SUPPLEMENTAL CODED DATA 14	STATION PRESSURE (inches) 22	SEA LEVEL PRESSURE 22a	TOTAL SKY COVER 17	OBSERVER'S INITIALS 15
NOT REQUIRED	30.250	265	5	*GB*
NOT REQUIRED	30.050	196	7	*CS*
NOT REQUIRED	29.965	167	8	*DC*

REVIEW
(COLS 9-22a)

COL 09 – PRESENT WEATHER:

- ENTER PRESENT WEATHER IN ORDER OF PRECEDENCE USING TABLE II-5-1 OF 3144.1D.

– COL 10 - SKY CONDITION:

- USE TABLE II-3-8 OF 3144.1D TO MATCH THE PROPER SKY COVER CONTRACTION TO THE AMOUNT OF EACH LAYER PRESENT.
- USE THE SUMMATION PRINCIPLE TO ADD UP INDIVIDUAL CLOUD LAYERS FROM THE LOWEST TO THE HIGHEST LAYER.
- CUMULATIVE TOTALS OF ALL LAYERS CANNOT EXCEED 8/8THS.

– COLS 11,12,20 - TEMPERATURE, DEWPOINT & WET BULB :

- ENSURE ***AIR TEMP AND WET BULB TEMP*** ARE TAKEN IN AN AREA THAT IS **SHADY, WELL VENTILATED** AND FREE FROM SHIPBOARD VENTILATION SOURCES.
- ENSURE ***WET BULB*** SOCK IS CLEAN AND WET.
- CALCULATE DEWPOINT USING **TABLES II--7-2 OF THE 3144.1D**.

REVIEW
(COLS 9-22a CONT)

BAROMETRIC PRESSURE

COLS 13, 22, 22a:

- **COL 22 - STATION PRESSURE:**
  - PRESSURE READING TAKEN directly FROM THE BAROMETER (ON BRIDGE).

- **COL 22a - SEA LEVEL PRESSURE:**
  - USING THE ADDITIVE CONSTANT TABLE II-6-2 IN THE 3144.1D, ADD THE CORRECTION
  - VALUE THAT REPRESENTS THE HEIGHT OF THE BAROMETER ABOVE SEA LEVEL .
  - CONVERT TO MILLIBARS FOR COL 22a ENTRY

- **COL 13 - ALTIMETER SETTING:**
  - MAY BE REQUIRED ON SHIPS WITH A FLIGHT DECK; OTHERWISE, THIS IS NOT REQUIRED.
  - ADD THE FLIGHT DECK CORRECTION VALUE FROM TABLE II-6-2 TO THE STATION PRESSURE

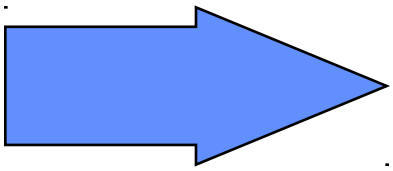
REVIEW
(COLS 9-22a CONT)

- **COL 14 - REMARKS:**
  - NOT REQUIRED FOR QUARTERMASTERS, BUT SEVERE WEATHER CONDITIONS SHOULD BE NOTED WHENEVER POSSIBLE.

- **COL 17 - TOTAL SKY COVER**:
  - USING THE CONTRACTIONS FROM COL 10, ENTER THE VALUE THAT REPRESENTS THE TOTAL COVERAGE.
  - CAN BE NO MORE THAN 8 OR 8/8TH'S.

- **COL 15 - OBSERVERS INITIALS:**
  - ENTER OBSERVERS INITIALS (NEATLY).

MOVING ON



SHIPS POSITION, STATUS & SEA CONDITIONS (COLS A-G)

COL A: SHIPS POSITION (LATITUDE & LONGITUDE)

- **1. "Q" QUADRANT OF THE GLOBE**

WEST LONGITUDE: NORTH LATITUDE = 7
SOUTH LATITUDE = 5
EAST LONGITUDE: NORTH LATITUDE = 1
SOUTH LATITUDE = 3

- **2. LATITUDE (3 COLS):**
  - ENTER IN WHOLE DEGREES AND TENTHS
    EX: 30.47.4N = 30.7
    ENTER La 3, La 0, La 7

- **3. LONGITUDE (4 COLS):**
  - ENTER IN WHOLE DEGREES AND TENTHS
    EX: 076.18.2W = 076.3W
  - **ENTER Lo 0, Lo 7, Lo 6, Lo 3**

SHIP'S POSITION (A)								SHIP'S COURSE	SHIP'S SPEED	SEA WATER TEMP 1/10 °C	SEA WAVES PERIOD HEIGHT	PRIMARY SWELL DIRECTION PERIOD HEIGHT	SECONDARY SWELL DIRECTION PERIOD HEIGHT
	LAT			LON									
Q	La	La	La	Lo	Lo	Lo	Lo						
								B	C	D	E	F	G
7	**3**	**0**	**7**	**0**	**7**	**6**	**3**						
7	**3**	**0**	**7**	**0**	**7**	**6**	**3**						
7	**3**	**0**	**7**	**0**	**7**	**6**	**3**						

SHIPS COURSE & SPEED AND SEA TEMP (COLS B,C AND D)

- **COL B SHIPS COURSE:**
  - ENTER SHIPS TRUE COURSE **TO THE NEAREST DEGREE**. **EX:** 321, 320, 333. 335
  - ENTER A **"-"** WHEN SHIP IS NOT UNDERWAY.

- **COL C SHIPS SPEED**:
  - ENTER SHIPS SPEED TO THE **NEAREST WHOLE KNOT**.
  - ENTER A "**-**" WHEN THE SHIP IS NOT UNDERWAY.
  - PREFIX SPEEDS LESS THAN 10 KNOTS WITH A ZERO.

- **COL D SEA WATER TEMP:**
  - ENTER SEA TEMP TO THE NEAREST **1/10** OF A DEGREE CELSIUS.
  - ENTER **"M**' FOR MISSING DATA.

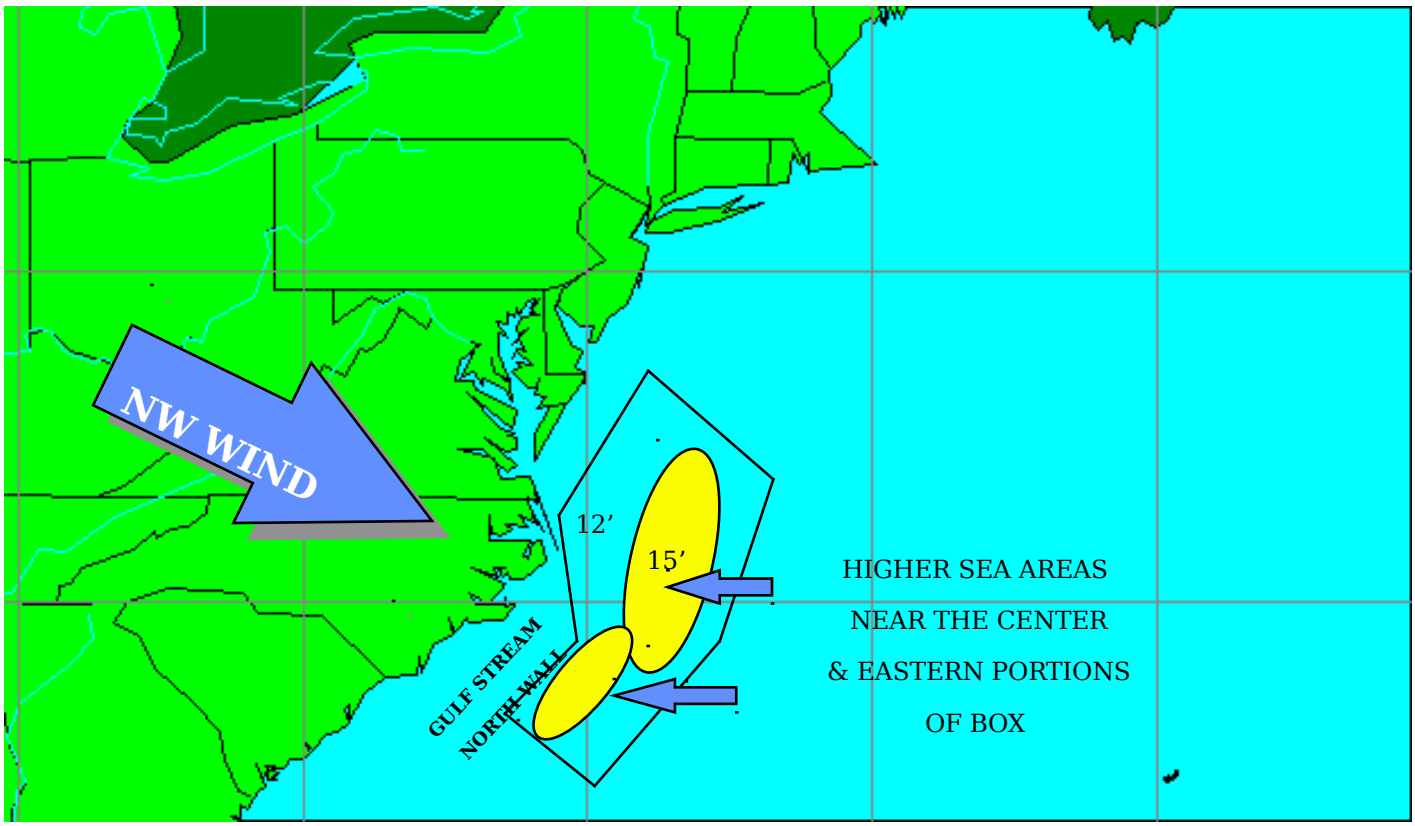
  EX: 10.5, 10.0 , 05.5

SHIP'S POSITION (A)								SHIP'S COURSE	SHIP'S SPEED	SEA WATER TEMP 1/10 ^{O}C	SEA WAVES PERIOD HEIGHT	PRIMARY SWELL DIRECTION PERIOD HEIGHT	SECONDARY SWELL DIRECTION PERIOD HEIGHT
LAT				LON									
Q	La	La	La	Lo	Lo	Lo	Lo						
								B	C	D	E	F	G
7	3	0	7	0	7	6	3	076	08	09.7			
7	3	0	7	0	7	6	3	090	15	M			
7	3	0	7	0	7	6	3	-	-	10.0			

SEA AND SWELL WAVES
DEFINITIONS

- **SEA WAVES:** SEA WAVES ARE WAVES GENERATED BY THE TRUE WIND OBSERVED IN COLS 3 & 4.
- **WAVE PERIOD**: THE TIME INTERVAL BETWEEN THE PASSAGE FROM ONE WAVE CREST TO THE NEXT.
- **SEA WAVE HEIGHT**: THE HEIGHTS OF THESE WAVES WILL DEPEND UPON THE AVERAGE SPEED OF THE WAVES OVER A GIVEN PERIOD OF TIME DEPENDING ON AVAILABLE FETCH.
- **WHAT IS FETCH:** THE DISTANCE WIND MUST BLOW OVER A BODY OF WATER TO ATTAIN A MATHEMATICAL MAX HEIGHT
- **FETCH LIMITED:** NOT ENOUGH FETCH AVAILABLE FOR SEAS TO ATTAIN MAX HEIGHT:

  EX: NORTHWEST WIND AT 30 KTS 50 NM EAST OF VA BEACH



SEA WAVES (COL E)

- **AVERAGE WAVE PERIOD:**
  - ENTER IN SECONDS USING TENS AND UNITS
  - FOR CALM SEAS ENTER **“00”**
  - FOR A CONFUSED SEA WAVE STATE (CANNOT DETERMINE PERIOD) ENTER **“99”**

- **SIGNIFICANT WAVE HEIGHT:**
  - SIGNIFICANT WAVE HEIGHT IS THE HIGHEST 1/3 OF WAVES OBSERVED. ENTER USING TENS AND UNITS
  - ENTER **“00”** FOR CALM SEAS.

- **NOTE**: SEA WAVE PERIOD MAY BE CONFUSED, BUT THE THE HEIGHT WILL NOT.

SHIP'S POSITION (A)								SHIP'S COURSE	SHIP'S SPEED	SEA WATER TEMP 1/10 ^{O}C	SEA WAVES PERIOD HEIGHT	PRIMARY SWELL DIRECTION PERIOD HEIGHT	SECONDARY SWELL DIRECTION PERIOD HEIGHT
LAT				LON									
Q	La	La	La	Lo	Lo	Lo	Lo						
								B	C	D	E	F	G
7	3	0	7	0	7	6	3	076	08	09.7	**0304**		
7	3	0	7	0	7	6	3	090	15	M	**0202**		
7	3	0	7	0	7	6	3	-	-	10.0	**0000**		

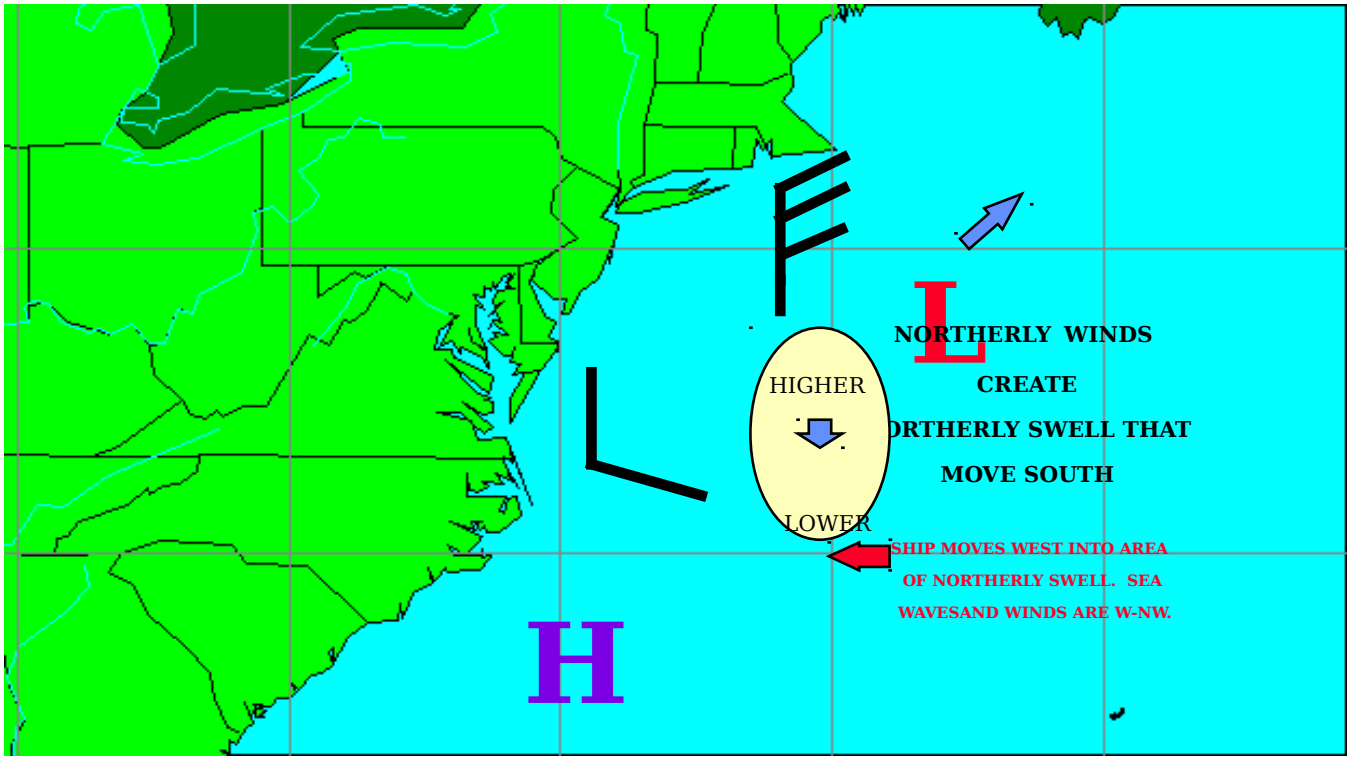
SWELL WAVES

- **WHAT ARE SWELL WAVES:**
  - SWELL WAVES ARE WAVES NORMALLY GENERATED IN

    AN AREA WELL AWAY FROM YOUR VESSEL.
- **CHARACTERISTICS:**
  - SWELLS OFTEN COME FROM A DIRECTION THAT IS DIFFERENT THAN THE TRUE WIND. (30 OR MORE DEGREES)
  - LONGER WAVE PERIOD (LONGER WAVELENGTH)

    OFTEN CAUSES THE MOST NOTABLE PITCH/ROLL.

GRAPHIC ILLUSTRATION:



ENTERING SWELL WAVES (COLS F & G)

- **COL F:** PRIMARY SWELL WAVE DATA
- **COL G:** SECONDARY SWELL WAVE DATA

- **SWELL DIRECTION** (FIRST 2 DIGITS IN EACH GROUP):
  - ENTER IN HUNDREDS AND TENS OF DEGREES

- **SWELL PERIOD** (SECOND 2 DIGITS IN EACH GROUP): ENTER THE PERIOD OF THE SWELLS IN SECONDS.
  - ENTER “99” IF CONFUSED.

- **SWELL HEIGHT** (LAST 2 DIGITS IN EACH GROUP): ENTER THE SIGNIFICANT WAVE HEIGHT IN FEET

SHIP'S COURSE	SHIP'S SPEED	SEA WATER TEMP 1/10 ^{O}C	SEA WAVES PERIOD HEIGHT	PRIMARY SWELL DIRECTION PERIOD HEIGHT	SECONDARY SWELL DIRECTION PERIOD HEIGHT
B	C	D	E	F	G
076	**08**	**09.7**	**0304**	**360808**	**131002**
090	**15**	**M**	**0202**	**350805**	
-	**-**	**10.0**	**0000**	**350802**	

REVIEW (COLS A-G)

- **COL A - LATITUDE & LONGITUDE:**
  - ENTER IN WHOLE DEGREES AND TENTHS
  - DETERMINE TENTHS DIGIT BY DIVIDING BY 6 AND DISREGARDING THE REMAINDER.
- **COLS B & C - SHIPS COURSE & SPEED**:
  - ENTER COURSE TO THE NEAREST DEGREE
  - ENTER **"-"** WHEN ANCHORED
  - PREFIX SPEEDS <10 KNOTS WITH A ZERO.
- **COL D - SEA WATER TEMP:**
  - ENTER TO THE NEAREST **1/10TH DEGREE CELSIUS**.
- **COL E - SEA WAVES**:
  - ENTER PERIOD IN SECONDS AND HEIGHT IN FEET OF THE WIND WAVE
  - ENTER **"0000"** FOR CALM
  - ENTER **"99"** FOR CONFUSED PERIOD **(9903)**
- **COLS F & G - SWELL WAVES:**

CRITERIA FOR ENTERING BOTH IS IDENTICAL (2 DIGITS)

  - ENTER DIRECTION IN HUNDREDS AND TENS OF DEGREES.
  - ENTER PERIOD IN SECONDS (**99** FOR CONFUSED)
  - ENTER SWELLS IN FEET (**SIGNIFICANT WAVE HEIGHT**)